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# PATENT SPECIFICATION

1,162,533

DRAWINGS ATTACHED.

Inventor:—WILLIAM GEORGE BRADLEY.

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## COMPLETE SPECIFICATION.

### An Improvement in or relating to a Method of and Means for Coating the Interior of Pipes.

We, MERCOL PRODUCTS LIMITED, a British Company, of Brimington Old Station, Chesterfield, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a device for use in applying a liquid or plastic coating medium to the internal wall of a rigid pipe and has for its object to provide an improvement in or modification of the spraying or distributing device described in our prior Patent Specification No. 1,003,328.

According to the invention, there is provided an improvement in or modification of the spraying or distributing device as claimed in Claim 4 of our prior Patent Specification No. 1,003,328, the device incorporating means for making repeated impacts or rapid wiping actions upon the coated wall of the pipe, said means including a plurality of cylindrical impact members or flails mounted by means of chain link connections on a rotatable disc, the improvement or modification residing in the fact that each impact member or flail is slotted intermediate its ends so that when being fitted into a relatively small bore pipe the cylindrical end portions of the impact members or flails partially overlap the periphery of the rotatable disc.

In order that the invention may be fully understood and readily carried into effect, a preferred embodiment of a device embodying the invention will now be described, by way of example only, with reference to the drawings accompanying the Provisional Specification, of which:—

Fig. 1 is a plan view of a device embodying the invention, and

Fig. 2 is an end elevation thereof.

Referring now to the drawings, a spraying or distributing device embodying the invention includes a cylindrical casing 10 having at one end a screwed adaptor 12 for the connection of the discharge end of a flexible pipe-line (not shown) for conveying a liquid or plastic coating medium under pressure, and a screwed adaptor 14 for the connection of the discharge end of a further flexible pipe-line (not shown) for conveying air under pressure.

A cylindrical member 16 is mounted at the other end of the casing 10 for rotation about the axis of said casing, and a pair of oppositely disposed slots 18 extend obliquely across the surface of said member for the escape of the coating medium which communicates therewith from the adaptor 12 by means (not shown) contained within the casing 10. The member 16 thus acts as a distributor for the coating medium.

A spindle 20 on which the cylindrical member 16 is mounted, and which is supported on bearings (not shown) within the casing extends outwardly beyond said member and carries a disc 22 for rotation with said member. The disc is provided with a series of eight generally cylindrical impact members 24 which are connected thereto by chain link connections. The impact members can thus operate in the manner of flails when the cylindrical member 16 and the disc 22 are together driven at high speed.

Each impact member is slotted intermediate its ends as shown at 25 so that (as

shown in chain-dotted lines in Fig. 2) the cylindrical end portions thereof can partially overlap the periphery of the disc 22. In this way, the range of pipe diameters in which the device can be used is increased. That is to say, pipes having a relatively small bore can receive the device whereas they would have been unable to do so if the impact members had not been slotted.

A compressed air motor (not shown) is contained within the casing 10 for driving the spindle 20 and with it the cylindrical member 16 and the flail-carrying disc 22, and air which is supplied to said motor by way of the adaptor 14 passes out through a plurality of holes 26 in the wall of the casing 10.

Two sets of flexible leather discs 28 encircle the casing 10, the two sets being spaced one from the other so that they can act as supports for the device to maintain it in a substantially central position within a larger pipe to be coated with the liquid or plastic coating medium.

In operation, the flexible pipes for conveying respectively coating medium and air under pressure, and the device, are pulled through the pipe to be coated (which may be an underground pipe to be coated in situ) to a point at which the coating is to commence. The device is then retracted by pulling on the flexible pipes in the reverse direction, and as the compressed air motor (not shown) is put into operation, and the coating medium is fed to the device, the coating medium is flung on to the walls of the pipe to be coated (which may be covered in moisture) through the slots 18 and the flails 24 following immediately in the wake of the member 16 make repeated impacts or wiping actions upon the coated pipe wall. In the result, if the pipe to be coated has been covered with moisture, the applied coating medium and globules of moisture in the pile are beaten into an emulsion which effectively adheres to the pipe wall.

It will be understood that the flexible leather discs 28 can act as supports for the device within a pipe having the same internal diameter as the outside diameter of said discs or within a pipe of slightly

greater diameter. Since pipes of various internal diameters are to be coated by the same device, however, it will be advantageous to provide means whereby said discs can from time to time be removed for replacement by discs of more appropriate diameter. Similarly, although the impact members or flails can obviously operate within a relatively wide range of pipe diameters, if pipes of widely varying internal diameters are to be coated, it will be desirable to provide a plurality of discs 22 of various nominal diameters, each provided with a set of flails, which may be used within pipes in a certain size range. The motor for driving the flails need not of course be a compressed air motor. It could if desired be an electric motor for example.

#### WHAT WE CLAIM IS:—

1. An improvement in or modification of the spraying or distributing device as claimed in Claim 4 of our prior Patent Specification No. 1,003,328. the device incorporating means for making repeated impacts or rapid wiping actions upon the coated wall of the pipe, said means including a plurality of cylindrical impact members or flails mounted by means of chain link connections on a rotatable disc, the improvement or modification residing in the fact that each impact member or flail is slotted intermediate its ends so that when being fitted into a relatively small bore pipe the cylindrical end portions of the impact members or flails partially overlap the periphery of the rotatable disc.
2. A spraying or distributing device constructed, arranged and adapted to operate, substantially as hereinbefore described with reference to and as illustrated by the drawings accompanying the Provisional Specification.

MEWBURN ELLIS & CO.,

70—72 Chancery Lane,

London, W.C.2,

Chartered Patent Agents,

and

24 Norfolk Row, Sheffield, 1,

Agents for the Applicants.

